



Application No. 09/768,253

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Reply to Office Action November 29, 2006

Docket No.: 1982-0163P

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (CURRENTLY AMENDED) A digital camera comprising:

(a) a housing provided with a plurality of lens groups movable along an optical axis in accordance with an instructed magnification;

(b) an image sensor disposed for receiving light through the lens groups and producing an electronic information in accordance therewith;

(c) a non-volatile memory connected to the image sensor for receiving and storing data in accordance with the electronic information received from the image sensor; and

(d) a controller electronically controlling the non-volatile memory and movement of the lens groups, the controller having program logic defining a plurality of operation modes, the logic upon power initiation determining an operation mode, and if the mode is determined to be an image recording mode, the logic causing the controller to commence moving the lens groups to initialization positions and perform initialization processing for enabling image recording, and after completion of the initialization processing for enabling image processing, upon receipt of a command for photographing generated by a shutter being pressed during a movement of the lens group to the initialization positions, control the non-volatile memory to store data in accordance with the electronic information presently available from the image sensor ~~before~~ prior to

the lens group have ~~arrived at~~ completed the movement to the initialization positions.

2. (CURRENTLY AMENDED) The digital camera according to claim 1, wherein the program logic causes the controller to initialize the image sensor and the non-volatile memory for image recording.

3. (ORIGINAL) The digital camera according to claim 2, further comprising a display device controlled by the controller, the program logic upon initialization, initializing the display device for displaying information.

4. (PREVIOUSLY PRESENTED) The digital camera according to claim 3, wherein the display device is a display or an LED.

5. (PREVIOUSLY PRESENTED) The digital camera according to claim 1, wherein the lens groups comprise a zoom lens group which moves in accordance with an instructed magnification and a focus lens group for focusing, the controller controlling the focus lens group to follow movement of the zoom lens group to an initialization position.

6. (PREVIOUSLY PRESENTED) The digital camera according to claim 5, further comprising a detector in electronic communication with the controller, the detector detecting a movement amount of the zoom lens group, and the controller controlling movement of the focus lens group in accordance with the movement amount detected by said detector.

7. (PREVIOUSLY PRESENTED) The digital camera according to claim 6, wherein the detector is formed by a cord plate and a terminal.

8. (PREVIOUSLY PRESENTED) The digital camera according to claim 6, wherein the detector detects step movement, each step corresponding to a movement range of the zoom lens group from a retracted position to the initialization position divided into a substantially equal number of intervals, with step movement information being provided to the controller for movement of the focus lens group in accordance therewith.

9. (CURRENTLY AMENDED) A method for activating a digital camera having a plurality of lens groups which move in accordance with an instructed magnification, and an image sensing system disposed for receiving an image from the lens groups and producing an electronic information representing the image, the method comprising:

- (a) determining an operation mode upon power initiation; and
- (b) if the operation mode is an image recording mode, then:
 - (i) initializing the image sensing system for receiving the image from the lens groups and producing the electronic information representing the image;
 - (ii) moving the lens groups to initialization positions; and
 - (iii) after completion of initializing the image sensing system, upon receipt of a command for photographing generated by a shutter being pressed during the movements of the lens groups to the initialization positions, ~~recording an~~ producing the electronic information representing the image presently available from the image sensing system prior to the lens groups ~~arriving at~~ having completed their movements to the initialization positions for recording the electronic information representing the image into a non-volatile memory.

10. (CANCELED)

11. (PREVIOUSLY PRESENTED) The method of claim 9, wherein recording the electronic information representing the image includes displaying the image in accordance with the electronic information on a display device.

12. (PREVIOUSLY PRESENTED) The method of claim 9, wherein the lens groups comprise a zoom lens group which moves in accordance with the instructed magnification and a focus lens group for focusing, wherein moving the lens groups to the initialization positions include moving the focus lens group to follow movement of the zoom lens group during the movement of the zoom lens group to the initialization position.

13. (PREVIOUSLY PRESENTED) The method of claim 12, wherein moving the focus lens group to follow the movement of the zoom lens group includes detecting a movement amount of the zoom lens group using a detector.

14. (PREVIOUSLY PRESENTED) The method of claim 13, wherein detecting the movement amount includes:

dividing a range of the zoom lens group into a plurality of steps, said range being from a retracted position to the initialization position, and storing movement amounts of the focus lens group corresponding to respective steps; and

reading the movement amounts of the focus lens group corresponding to the step detected by the detector and moving the focus lens group.

15. (CURRENTLY AMENDED) A method for use in a digital camera having a plurality of lens groups movable in accordance with an instructed magnification, and an image sensing system disposed for receiving an image from the lens groups and producing an electronic information representing the image, the method comprising:

(a) determining if an operation mode has changed; and

(b) if the operation mode has changed to an image recording mode, then:

(i) initializing the image sensing system for receiving the image from the lens groups and producing the electronic information representing the image;

(ii) moving the lens groups to initialization positions; and

(iii) after completion of initializing the image sensing system, upon receipt of a command for photographing generated by a shutter being pressed during the movements of the lens groups to the initialization positions, recording and producing the electronic information representing the image presently available from the image sensing system prior to the lens groups arriving at having completed their movements to the initialization positions for recording the electronic information representing the image into a non-volatile memory.

16. (CURRENTLY AMENDED) The method of claim 15, wherein ~~the camera includes a memory and~~ initializing the image sensing system includes initializing the non-volatile memory for storing data in accordance with the electronic information from the image sensing system.

17. (PREVIOUSLY PRESENTED) The method of claim 16, wherein the camera includes a display device, and wherein recording electronic information representing the image includes enabling display of the image in accordance with the electronic information from the image sensing system.

18. (PREVIOUSLY PRESENTED) The method of claim 15, wherein the lens groups include a zoom lens group which moves in accordance with the instructed magnification and a focus lens group

which moves to follow the movement of the zoom lens group during the movement of the zoom lens group to the initialization positions.

19. (PREVIOUSLY PRESENTED) The method of claim 18, wherein moving the focus lens group to follow movement of the zoom lens group includes detecting a movement amount of the zoom lens group using a detector.

20. (PREVIOUSLY PRESENTED) The method of claim 19 wherein detecting the movement amount of the zoom lens group includes:

dividing a range of said zoom lens group into a plurality of steps, said range being from a retracted position to the initialization position, and storing movement amounts of the focus lens group corresponding to respective steps; and

reading the movement amounts of the focus lens group corresponding to the step detected by the detector and moving the focus lens group.

21. (PREVIOUSLY PRESENTED) A camera, comprising:

a plurality of lens groups;

an image sensor for sensing an image from light received through the plurality of lens groups; and

a controller for controlling movements of the plurality of lens groups, for controlling the image sensor, and for controlling a storage of the image data into a non-volatile memory accessible by the camera,

wherein when the controller receives instructions for photographing generated by a shutter being pressed during a movement of the plurality of lens groups from a first predetermined position to a second predetermined lens position, the controller controls the image sensor to sense the image prior to the plurality of lens groups have completed their movements to the second

predetermined lens position for recording the image data into the non-volatile memory.

22. (PREVIOUSLY PRESENTED) The camera of claim 21, wherein the first predetermined position of the plurality of lens groups is one of a tele position and a wide position and the second predetermined position of the plurality of lens groups is the other of the tele position and the wide position.

23. (PREVIOUSLY PRESENTED) The camera of claim 21, wherein the controller controls the plurality of lens groups such that the image is focused during the movement between the first and second predetermined positions.

24. (PREVIOUSLY PRESENTED) The camera of claim 21, further comprising a display, wherein the image is displayed on the display during the movement between the first and second predetermined positions.

25. (PREVIOUSLY PRESENTED) The camera of claim 21, wherein the plurality of lens groups include:

a zoom lens; and

a focus lens,

wherein the controller controls a movement of the zoom lens to control an image magnification and the controller controls the movement of the focus lens to control image focus.

26. (PREVIOUSLY PRESENTED) The camera of claim 25, wherein the zoom lens has a plurality of magnification ranges, the zoom lens goes through the plurality of magnification ranges during the movement of the plurality of lens groups between a retracted position and the first predetermined position, and upon camera power up, the controller controls the movement of the plurality of lens groups between the retracted and the first predetermined positions.

27. (PREVIOUSLY PRESENTED) The camera of claim 26, wherein the first predetermined position of the plurality of lens groups is one of a tele position and a wide position and the second predetermined position of the plurality of lens groups is the other of the tele position and the wide position.

28. (CURRENTLY AMENDED) A method for controlling a camera, comprising:

moving a plurality of lens groups from a first predetermined position to a second predetermined position;

determining if an instruction to record an image by a shutter being pressed is received ~~before~~ during the movement of the plurality of lens groups from the first predetermined position to the second predetermined position ~~is completed~~; and

sensing the image prior to the plurality of lens groups have completed the movement to the second predetermined position and storing the image to a non-volatile memory accessible by the camera ~~before the movement of the plurality of lens groups from the first predetermined position to the second predetermined position is completed~~ when it is determined that the instruction for photographing generated by ~~a~~ the shutter being pressed is received.

29. (PREVIOUSLY PRESENTED) The method of claim 28, wherein the first predetermined position of the plurality of lens groups is one of a tele position and a wide position and the second predetermined position of the plurality of lens groups is the other of the tele position and the wide position.

30. (PREVIOUSLY PRESENTED) The method of claim 28, wherein further comprising maintaining a focus of the image during the movement of

the plurality of lens group between the first and second predetermined positions.

31. (PREVIOUSLY PRESENTED) The method of claim 28, further comprising displaying the image on a display during the movement of the plurality of lens group between the first and second predetermined positions.

32. (PREVIOUSLY PRESENTED) The method of claim 28, wherein the plurality of lens groups include a zoom lens and a focus lens, the method further comprising:

controlling a movement of the zoom lens to control an image magnification; and

controlling the movement of the focus lens to control image focus.

33. (PREVIOUSLY PRESENTED) The method of claim 32, wherein the zoom lens has a plurality of magnification ranges and the zoom lens goes through the plurality of magnification ranges during the movement of the plurality of lens groups between a retracted position and the first predetermined position, the method further comprising controlling the movement of the plurality of lens groups between the retracted and the first predetermined positions upon camera power up.

34. (PREVIOUSLY PRESENTED) The method of claim 33, wherein the first predetermined position of the plurality of lens groups is one of a tele position and a wide position and the second predetermined position of the plurality of lens groups is the other of the tele position and the wide position.

35-37. (CANCELED)

38. (PREVIOUSLY PRESENTED) The digital camera of claim 1, wherein the receipt of the command for image recording occurs when a shutter button of the digital image camera is fully depressed to start a photographing operation.

39. (PREVIOUSLY PRESENTED) The method of claim 9, wherein the receipt of the command for image recording occurs when a shutter button of the digital image camera is fully depressed to start a photographing operation.

40. (PREVIOUSLY PRESENTED) The method of claim 15, wherein the receipt of the command for image recording occurs when a shutter button of the digital image camera is fully depressed to start a photographing operation.

41. (PREVIOUSLY PRESENTED) The camera of claim 21, wherein the controller receives the instructions to record the image when a shutter button of the camera is fully depressed to start a photographing operation.

42. (PREVIOUSLY PRESENTED) The method of claim 28, wherein the receipt of the instructions to record the image occurs when a shutter button of the camera is fully depressed to start a photographing operation.

43. (PREVIOUSLY PRESENTED) The camera of claim 21, wherein the first predetermined position is the position of the plurality of lens groups when the digital camera is turned off and the second predetermined position is the initialization position when the camera is turned on.

44. (PREVIOUSLY PRESENTED) The method of claim 28, wherein the first predetermined position is the position of the plurality of lens groups when the digital camera is turned off and the second predetermined position is the initialization position when the camera is turned on.